

CLAIMS

1. An optical head device comprising: a light source;  
an objective lens for focusing light emitted from this light  
5 source onto an optical recording medium; a photodetector for  
detecting light reflected off said optical recording medium;  
and one or more aberration correction optical elements which  
are disposed within a path of said light between said light  
source and said objective lens, and correct aberration of  
10 said light generated within that path, wherein said one or  
more aberration correction optical elements are selected  
from amongst a plurality of different aberration correction  
optical elements, in accordance with said aberration.

2. The optical head device according to claim 1,  
15 wherein said plurality of different aberration correction  
optical elements provide correction for mutually different  
types, signs, and quantities of aberration.

3. The optical head device according to claim 1 or 2,  
wherein said aberration is one type of aberration selected  
20 from coma, spherical aberration, astigmatism, and arrow  
aberration, a single aberration correction optical element  
is placed within the path of said light, and the single  
aberration correction optical element corrects said one type  
of aberration.

25 4. The optical head device according to claim 1 or 2,  
wherein said aberration includes two types of aberration  
selected from coma, spherical aberration, astigmatism, and  
arrow aberration, two aberration correction optical elements

are placed within the path of said light, and one of the two aberration correction optical elements corrects one of said two types of aberration, while another of said two aberration correction optical elements corrects another of  
5 said two types of aberration.

5. The optical head device according to claim 1 or 2, wherein said aberration includes three types of aberration selected from coma, spherical aberration, astigmatism, and arrow aberration, three aberration correction optical  
10 elements are placed within the path of said light, and of said three aberration correction optical elements, one aberration correction optical element corrects one of said three types of aberration, another of said three aberration correction optical elements corrects another of said three  
15 types of aberration, and yet another of said three aberration correction optical elements corrects yet another of said three types of aberration.

6. The optical head device according to claim 1 or 2, wherein said aberration includes coma, spherical aberration,  
20 astigmatism, and arrow aberration, four aberration correction optical elements are placed within the path of said light, and a first aberration correction optical element of the four aberration correction optical elements corrects said coma, a second aberration correction optical  
25 element corrects said spherical aberration, a third aberration correction optical element corrects said astigmatism, and a fourth aberration correction optical element corrects said arrow aberration.

7. The optical head device according to any one of claims 1 through 6, wherein at least one of a light incident surface and a light exit surface of said aberration correction optical element is a stepped surface comprising  
5 at least 2 steps.

8. The optical head device according to any one of claims 1 through 6, wherein at least one of a light incident surface and a light exit surface of said aberration correction optical element is formed as a curved surface.

10 9. The optical head device according to any one of claims 1 through 8, wherein said aberration includes coma, and an aberration correction optical element placed within the path of said light is installed so that a direction of aberration corrected by the aberration correction optical  
15 element substantially matches a direction of said coma.

10. The optical head device according to any one of claims 1 through 8, wherein said aberration includes astigmatism, and an aberration correction optical element placed within the path of said light is installed so that a  
20 direction of aberration corrected by the aberration correction optical element substantially matches a direction of said astigmatism.

11. The optical head device according to any one of claims 1 through 8, wherein said aberration includes arrow  
25 aberration, and an aberration correction optical element placed within the path of said light is installed so that a direction of aberration corrected by the aberration correction optical element substantially matches a direction

of said arrow aberration.

12. A method of manufacturing an optical head device comprising the steps of: assembling an optical system including a light source, an objective lens for focusing  
5 light emitted from this light source onto an optical recording medium, and a photodetector for detecting light reflected off the optical recording medium; measuring aberration generated in a light path within the optical system from said light source to said objective lens; and  
10 selecting, from amongst a plurality of different aberration correction optical elements, based on the results of the measured aberration, one or more aberration correction optical elements for correcting the aberration of said light, and then installing the optical element or elements within  
15 said light path of said optical system.

13. The method of manufacturing an optical head device according to claim 12, wherein said plurality of different aberration correction optical elements provide correction  
for mutually different types, signs, and quantities of  
20 aberration.

14 The method of manufacturing an optical head device according to claim 12 or 13, wherein the step of installing said one or more aberration correction optical elements within the optical system comprises the step of rotating  
25 said aberration correction optical element, using an optical axis of said light as a rotational axis, so that a direction of aberration corrected by said aberration correction optical element matches a direction of aberration generated

within the path of said light.

15. An optical information recording and/or playback apparatus comprising: the optical head device according to any one of claims 1 through 11; a first circuit for driving  
5 said light source; a second circuit for generating a playback signal and an error signal based on an output signal from said photodetector; and a third circuit for controlling a position of said objective lens based on said error signal.

10 16. The optical information recording and/or playback apparatus according to claim 15, wherein said first circuit is for driving said light source in accordance with a recording signal.

15 17. The optical information recording and/or playback apparatus according to claim 15, wherein said first circuit is for driving said light source with a constant output.